Operationalizing integrated landscape approaches in the tropics

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2

Integrated landscape approaches in the tropics

A brief stock-take*

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Introduction

The tropics represent a particular area of concern for conservation and development as they have endured unprecedented levels of environmental degradation, limited development relative to temperate areas, and have high concentrations of extreme poverty and malnutrition (Curtis et al. 2018; Song et al. 2018). The stakes are very high, as the tropics also host a disproportionately large share of global biodiversity with areas vulnerable to climate change (Barlow et al. 2018).

Recent global policy debates acknowledge the need for more integrated solutions that meet human needs and mitigate environmental harm. The Paris climate agreement and Sustainable Development Goals (SDGs) of 2015 explicitly call for more holistic approaches that better integrate the needs of people and planet. At the same time, major conservation organizations and development agencies have extended their *modus operandi* to better reflect the needs of people in conservation and nature in development (Reed et al. 2016). The private sector has expressed interest in working with landscape actors in attempts to "green" their supply chains, particularly through commitments to emissions reduction or zero deforestation initiatives (Lambin et al. 2018). Therefore, efforts to reconcile multiple – and often competing – claims on land mean that 'integrated landscape approaches' have become pervasive (Sayer et al. 2013; Reed et al. 2016).

Below, we draw on recent literature to address four challenges to implementation and maintenance of integrated landscape approaches. First, persistent science-practice-policy gaps in environmental governance; second, engagement of the private-sector; third, the dearth of evidence of implementation and effectiveness; and last, monitoring and evaluation. The final section discusses the findings and a possible way forward.

2.1 Environmental governance and bridging science-practice-policy gaps

One of the challenges facing integrated landscape approaches is the persistent gap between theory and implementation (Jasonoff 1996; Shanley and López 2009; Toomey et al. 2015; Toomey et al. 2017). Recent approaches to environmental governance therefore typically propose a transdisciplinary agenda (Toomey et al. 2015). This requires engaging a broad range of stakeholders from many disciplines, sectors, and scales of organization to collaboratively design and practice more sustainable and equitable landscape management. However, challenges remain and a tendency toward more sectorial approaches persists (Reed et al. 2019; Opdam 2018). There are likely many reasons for this.

The interplay between local institutions and research organizations or government agencies – despite being a prerequisite to effective co-production – is often lacking, as many have neither a history of, nor enthusiasm for, such engagement (Jentoft and McCay 1995). Related to this, the ethos of a landscape approaches may be more conceptually appealing to researchers than to those stakeholders who are more directly impacted by the consequences of crossing jurisdictional boundaries and negotiated land-use decisions and actions (Ros-Tonen et al. 2015; Ros-Tonen et al. 2018). An approach that has the potential to safeguard forests, enhance local well-being, conserve biodiversity and mitigate against the impacts of climate change is an easy sell. However, building awareness of the need to identify (and accept and negotiate) trade-offs is considerably more challenging; it is not unreasonable to suspect that neither landscape inhabitants faced with near-term socio-economic pressures, nor policy-makers faced with short-term political cycles, will be pleased with the prospect of short-term losses. As former European Council President Jean-Claude Juncker said in reference to political decision-making, "we all know what to do, we just don't know how to get re-elected after we've done it."[1]

Understanding the complex political history of land tenure is crucial (Riggs et al. 2016). Landscape approaches should take into account the rights and responsibilities of all stakeholders (Westerink et al. 2017; van Oosten et al. 2019) and include the institutional circumstances that involve a high complexity and heterogeneity of actors and their overlapping, multiple tenure systems and property rights (Mansourian and Sgard 2019). For example, analyses could consider the effect that clarifying or enhancing the tenure rights of local stakeholders has on natural resource management (Robinson et

1 The Economist (2007), "The Quest for Prosperity", March 15.

al. 2014; Lawry et al. 2017) or the extent to which local stakeholders are able to assert such rights in decision-making processes and resist the objectives of local elites or private interests (Agrawal et al. 1997; Ribot et al. 2010); and how such transformations might contribute toward national commitments to international sustainability targets. Despite recognition of the need for such analysis, we find limited incorporation in recent landscape approach literature. Indeed, a recently published report on tenure in landscape approaches concludes that refinement of analytical frameworks and organization of in-depth case studies are urgently required (Buck et al. 2019).

There are also challenges associated with the recognition and translation of local knowledge. For example, tacit and context-embedded local knowledge may not be recognized or trusted by holders of codified and expert knowledge in government and research organizations (Berkes 2009; Pfeffer et al. 2013); may not be easily articulated (Reid et al. 2006); or may arise from a different worldview with alternative assumptions, norms and rules (Bonny and Berkes 2008; Arts et al. 2017). The politics of knowledge (Escobar 1998; Goldman and Goldman 2003) that prioritizes expert over local knowledge and sustains mainstream thinking in social networks (Loconto et al. 2018) still tends to be ignored in the literature on integrated landscape approaches, despite evidence of the value of local knowledge on agricultural and environmental interventions (Toderi et al. 2017; Paneque-Galvez et al. 2018).

2.2 Engaging the private sector

Recent enthusiasm to engage the private sector in landscape approaches seems to be motivated by two factors: first, a substantial shortfall exists between current investments in the climate and sustainable development agendas, and the amount needed (Clark et al. 2018). Funding is mostly secured from public or philanthropic sources; therefore, closer private sector engagement could motivate contributions to meeting the shortfall. Second, while the private sector has traditionally been associated with the problem, rather than the solution to environmental degradation, this perception may be slowly changing. An alternative viewpoint suggests that public-private (-producer) partnerships can facilitate the greening of supply chains, encourage more environmentally sensitive behavior and stimulate "green growth" (Poulton and Macartney 2012). Concerns about failure to secure supply in the near future and to meet recent commitments to remove deforestation from major agricultural commodities' value chains may create a business case for increasing private sector engagement in landscape approaches (Scherr et al. 2017; Ros-Tonen et al. 2018).

Such prospects for green investment create an incentive for landscapes and jurisdictions to engage in sustainable landscape management and landscape certification (Boyd et al. 2018). There is good reason to be skeptical of this agenda and there have been accusations of "greenwashing" due to environmentally destructive actions by private sector actors who nevertheless advocate for sustainability (Pirard et al. 2015). However, with a more informed public demanding better product-sourcing information, increased pressure for companies to reduce supply chain emissions and enhance efficiency, as well as recognition that international products often depend on preserving

natural capital (and local livelihoods) in source landscapes, there is potential for increased and fruitful collaborations (Arts et al. 2017; Scherr et al. 2017).

Whatever the motivation, we will likely see more examples of public-private and public-private-producer partnerships (Thorpe and Maestre 2015) regardless of who initiates these collaborations. Certainly, an increasing number of companies – Mars, Unilever, Olam, Heineken, The Coca-Cola Company, to name a few – claim to be adopting landscape approaches in their operations and the scientific literature shows an increasing trend toward private-sector involvement in landscape partnerships (Kissinger et al. 2013; Denier et al. 2015; IDH 2017; Scherr et al. 2017; Ros-Tonen et al. 2018).

However, objectives of companies trading international commodities are typically mismatched with recognized principles for landscape approaches. For instance, agribusinesses have a sectorial focus, rely on annual production systems and produce quarterly reports to satisfy shareholders primarily motivated by profit. This contradicts landscape approaches that demand multiple stakeholders engaging across sectors in negotiation processes over long time frames to enhance equity and sustainability (Hart et al. 2015).

Nevertheless, private-sector engagement is often considered crucial to realizing the objectives of climate and sustainable development agendas, as well as the Bonn Challenge and the related New York Declaration on Forests (NYDF) which, respectively, aim to restore 350 million ha of degraded land and eliminate deforestation by 2030. Integrated landscape approaches have been recognized as a potential pathway to realizing these ambitions and the number of corporate commitments has now reached almost 800 (NYDF assessment partners 2018). Less encouraging, commitments from the soy and beef sectors still lag, as does reliable data (across all sectors) to show evidence of progress toward deforestation commitments (Forestdeclaration.org 2018). Indeed, the latest progress report shows that public and private sector commitments are failing to halt the destruction of natural ecosystems.[2] However, such commitments, although voluntary and non-binding, can stimulate the kind of transformations in business practices that the fulfillment of the SDGs and NYDF requires – but only if translated to action. Greater support from financial institutions, governments and civil society organizations will be necessary.

Of course, engaging the private sector in environmental governance discussion and practice is neither straightforward nor without its challenges. While companies should feel responsible to more fully engage and cooperate, that should not be considered a panacea or alternative pathway to sustainable development; it is simply one potential component of many potential solutions. Moreover, as private sector initiatives and public-private(-producer) partnerships evolve, government regulation of business activities and the work of watchdogs in monitoring supply-chain activities must play a crucial role. Examples include Trase Earth and the Borneo Atlas, while Forest Trends' Supply Change initiative tracks corporate progress toward voluntary commitments. The application of landscape approaches can also help by facilitating dialogue between

2 https://sdg.iisd.org/commentary/guest-articles/turning-the-new-york-declaration-on-forests-to-new-york-action-on-forests/.

private-sector actors, politicians, and local community members to develop more long-term institutional planning and build trust, empathy and capacity to better negotiate landscape-scale decision-making processes (Langston et al. 2019).

2.3 Evidence of implementation and first assessments of effectiveness

A recent global review shows plentiful landscape approaches being implemented worldwide. The Landscapes for People, Food and Nature (LPFN) group identified 428 examples of what it labels 'integrated landscape initiatives': 87 cases in Africa (Milder et al. 2014), 104 in Latin America and the Caribbean (LAC) (Estrada-Carmona et al. 2014), 166 in South and Southeast Asia (Zanzanaini et al. 2017) and 71 in Europe (García-Martín et al. 2016), providing the first global assessment of the characteristics, outcomes and limitations of landscape approaches.

Despite regional variations in motivations, outcomes, and challenges, recognizable patterns emerged; in particular, significant overlap in the findings from Africa and LAC (Hart et al. 2015). For example, four landscape 'domains' remained consistent across continents: nature conservation, farming and agriculture, livelihoods and human well-being, and institutional planning and coordination. In addition, Africa included dimensions of conflict reduction and climate change, while Europe included a cultural heritage dimension. Identified challenges included poor private-sector engagement, concerns over funding for long-term sustainability; lengthy time horizons to determine effectiveness; and (except in Africa) unsupportive or weak policy frameworks. These combined meant that progress and sustainability was often dependent on the impulses of civil society organizations. Nevertheless, there was a widely shared belief that the implementation of integrated landscape initiatives could stimulate more holistic management, consistent with the demands of multifunctional landscapes – particularly with enhanced political and societal support.

Another recent review charted the theoretical development of integrated landscape approaches (Reed et al. 2015; Reed et al. 2016). Insights revealed five key considerations for landscape practitioners: evaluate progress, establish good governance, avoid panaceas, engage multiple stakeholders, embrace dynamic processes. This was supported by the findings of a subsequent review of landscape approach implementation in the tropics that consistently showed community engagement, institutional support, good governance and capacity development were fundamental contributory factors toward the success of landscape approaches (Reed et al. 2017).

Another recent review process developed a typology of integrated landscape initiatives in Latin America and subsequently evaluated their performance (Carmenta et al. 2020). Using data from 104 different examples they found that landscape initiatives varied in their application along a spectrum of high to low integration. The analysis found that integration underscores performance, with those more highly integrated perceived

to be more effective by project proponents. Beyond these reviews, we found very few independent case studies in the literature that evaluated landscape approaches.

Evaluating landscape approaches has long been considered problematic for at least two reasons. First, stakeholders have different perceptions of success, demonstrated by two recent publications on landscape approaches in the Sangha Tri-national landscape in the northwestern Congo Basin that arrive at different outcomes (Sayer et al. 2016; Clay 2016). There can be multiple reasons for these contrasting outcomes.

One, temporality, is alluded to in both publications. Sayer et al. (2016) acknowledge that the challenges facing the Sangha Region have changed markedly in the last decade and will likely continue to do so; while Clay (2016) emphasizes the need for a nuanced understanding of socio-ecological relationships by considering both historical legacies and future trajectories of change.

Second, there is no common understanding of what constitutes satisfactory evidence of success. Scholars acknowledge that because robust evidence is missing and evaluation methods are not explicit, success is hard to gauge (Sayer et al. 2016; Reed et al. 2017). Although counterfactual impact assessments have been common practice in other sectors (Banerjee and Duflo 2009) and an encouraging body of evidence is developing for conservation and development initiatives (Agol et al. 2014; Ferraro and Hanauer 2014; Baylis et al. 2016), they generally target simple, time-bound and relatively small-scale interventions. Applying such assessments to landscape approaches is problematic because these methods generally require large sample sizes to find statistically sound controls (Sills et al. 2015). Besides, the complexity of landscape approaches, which generally correspond to an aggregation of smaller projects, and the fact that they are long-term, evolving activities, are additional challenges to run such methods. Alternative approaches to determine "success" that take account of complex and long-term processes are needed.

These inherent difficulties in applying robust evaluation methods are combined with the lack of reliable monitoring and evaluation systems. There is certainly no recognized universal standard for monitoring or evaluating performance of landscape approaches. Frameworks or indicators of development have been applied, as will be shown in the next section; the problem is instead associated with lack of implementation or widespread adoption, post-development. This could be due to insufficient financial resources, leading to a knowledge-implementation gap. It could be that implementing actors are reluctant or lack capacity to apply frameworks developed by others. Finally, lacking a universally agreed upon monitoring and evaluation (M&E) strategy might not be a bad thing; if we agree to look beyond panaceas to address complex challenges (Ostrom et al. 2007) it fits that M&E strategies should be highly contextualized. Nonetheless, robust (and ideally, participatory) monitoring systems are a fundamental principle of landscape approaches and crucial to identifying trade-offs and synergies as well as informing processes of adaptive management. The next section reviews recent developments in this regard.

2.4 Methodological developments in monitoring and evaluation

To overcome uncertainty in effectiveness and capture the breadth of landscape approaches, we need to move beyond a project mentality focused on outcomes and develop evaluation methods that recognize landscape approaches as long-term endeavors that demand increased attention to complex processes.

Recent literature discussing evaluation of landscape approaches has focused on developing appropriate metrics and indicators. Significant emphasis has been put on attempting to reconcile local stakeholder requirements with broader environmental objectives through local involvement in developing metrics to measure landscape performance – thus, including local stakeholders in broader evaluations (Dietz et al. 2013; Pouw et al. 2017). For example, the landscape measures framework (Buck et al. 2006; Milder et al. 2012) adopts a hierarchical approach of four overarching goals – conservation, production, livelihoods, and institutions – with twenty sub-criteria; essentially, 20 questions as indicators to evaluate social and biophysical change. Although the questions themselves are somewhat vague, reflecting the scale and diversity of landscapes, users are encouraged to refine, adapt or elaborate the questionnaire as required to best suit the landscape context and challenges.

The capital assets framework offers potential via its ability to capture both the dynamism of landscapes and the contrasting perceptions of multiple stakeholders. Similar to the landscape measures framework above, this approach, used by Sayer et al. (2007), advocates using social learning in a participatory process of developing simple indicator sets in key asset categories: financial, social, physical, human, and natural capital. In an explicit attempt to sustain stakeholder engagement – and, presumably, alleviate high transaction costs – the capital assets framework encourages continued and open stakeholder dialogue (rather than an over-reliance on expert opinion) throughout the process of conceptualizing, monitoring, and analyzing indicator sets. Analysis of the performance of "individual" assets relative to other assets allows for identification of trade-offs and can stimulate further stakeholder negotiation. Largely similar approaches are applied when assessing resilience or ecosystem service provision within a landscape (see, for example, Resilience Alliance 2010; Potschin and Haines-Young 2016).

Considering other evaluation approaches and principles can help strengthen the identification of metrics and indicators to be monitored. One of these is "systems thinking", which has been proposed as a core principle to evaluate complexity in the evaluation literature (Patton, 2011). Comprehensive landscape monitoring will likely depend on aggregate systems that encompass multiple variables of interest – ideally, with one indicator satisfying multiple objectives. While aggregate systems offer potential (albeit not without their own challenges), a rigorous assessment of a landscape system depends on evaluating not only the individual components, but also how these interact to influence the whole (Levin 1992; Ostrom 2009).

While there are several potential frameworks and approaches for landscape monitoring and evaluation available, the specific context will largely determine what must be measured and evaluated, and how to do this (see Chapters 5 and 6). An important limiting factor to developing appropriate metrics and methods for causal inference is the lack of data. Practitioners of landscape approaches should investigate publicly available data sources for their landscape of interest. Technological advances have greatly enhanced the ability to monitor land-use cover and change, and recent research also shows the potential for incorporating census, income, health and nutrition data, mobile phone usage and gas stove conversion figures to interpret the social implications of environmental decision-making (Jagger and Rana 2017).

Advances include new data sources at increasingly fine spatial and temporal resolutions, improved algorithms that increase the accuracy of remotely sensed detection (e.g. of fire or rainfall) (Aragao et al. 2008) and the large, open-access platforms that make available prepared data that can be incorporated into new analyses, e.g. Borneo Atlas, Trase, and Global Forest Watch. Added to the burgeoning suite of processed remote sensed data and their repositories (e.g. Maryland's Global Forest Change, NASA's Wed Fire Mapper) are additional sources of geo-referenced data across social, ecological (from biodiversity and carbon, to agricultural yields and soil quality) and economic domains. Examples are YieldGapMap and the World Conservation Monitoring Centre.

Increased use of publicly available spatial and social data sources can alleviate high transaction costs, but an element of 'ground-truthing' and data triangulation through random samples of household data, focus group discussions and semi-structured interviews with key individuals should be incorporated to provide a more complete analysis of landscape dynamics and intervention performance.

2.5 Discussion and conclusion

Humanity has made unprecedented social and economic progress in the last century. However, the continued overexploitation of natural resources and the associated impacts of climate change threaten the sustainability of many tropical social-ecological systems. Evidence shows that where sectorial approaches to conservation or development challenges prevail, tensions between conflicting stakeholder objectives persist (Sandker et al. 2009; Carmenta and Vira 2018). There is both a need, and desire, for more holistic approaches to addressing the challenges faced by tropical landscapes. Integrated landscape approaches are among such initiatives. This brief update on the progress of landscape approaches in the tropics reveals that there is considerable enthusiasm for landscape-scale interventions that clearly transcend the research and academic community. The Global Landscapes Forum (GLF) as a knowledge-led platform has successfully provided a convening space for actors that might ordinarily be at odds with one and other, and has a mandate to broaden its reach to engage over one billion people in integrated landscape approaches. Meanwhile, such integrated approaches that aim to link conservation and development concerns are gaining prominence in international conventions related to climate (UNFCCC), biodiversity (CBD), forest restoration (Bonn

Challenge) and development (SDGs). Clearly, integrated landscape approaches that better considers the needs of multiple stakeholders operating within and outside of the landscape of concern offers potential to develop more equitable management solutions. It is, however, important to recognize that such approaches are not a cure-all for every social and environmental ill, and important gaps in understanding remain.

Challenges for implementation of landscape approaches include accurately conceptualizing what they represent and how they should function – both in terms of the appropriate spatial scale for implementation and the configuration and governance of actors (Clay 2016) and resources (McCall 2016). It is also worth considering the extent to which landscape approaches, in common with other integrated approaches that came before, are more readily marketed than implemented (Pfund 2010). Certainly, the scientific literature points to a lack of evidence of effectiveness (Reed et al. 2017; Sayer et al. 2017). This does not necessarily indicate that landscape approaches are not happening nor effective. Instead, it may be that more localized initiatives (Foli et al. 2018; Ros-Tonen et al. 2018) are not being adequately tested or reported. However, this lack of evidence limits the ability to show where, and under what conditions, landscape approaches are successful (or even feasible) and leaves us with an incomplete understanding of the governance and functioning of such initiatives in practice.

In order to better engage with the realities of complex tropical landscapes, landscape approaches must be long-term and transdisciplinary in nature (Boedhihartono et al. 2018). However, funding for such long-term endeavors is a challenge, with donors traditionally opting to support project cycles of two to three years, and significant challenges associated with bringing together actors from within and across areas of expertise and knowledge (Sayer et al. 2014 and Chapter 4). Questions also remain over how best to engage the private sector and incentivize the political sector. Indeed, there are several elements of landscape approach theory that are, as yet, inadequately supported with robust empirical evidence.

Landscape approaches are conceptually attractive (Chia and Sufo 2015) and offer considerable potential to address socio-economic and environmental trade-offs facing people and nature in complex tropical landscapes. To meet these challenges, landscape approaches must be implemented in varied contexts, up-scaled, monitored, evaluated and documented. The research community has a fundamental role in advancing landscape approaches – both in theory and practice. Transdisciplinary research that learns from multiple and varied knowledge systems should be encouraged and can be supported via tools for scenario-building and theory of change development alongside mixed-methods analyses that capture social perceptions and ecological dynamics. Moreover, the future landscape approach research agenda must more explicitly address power asymmetries (Clay 2016; Ros-Tonen et al. 2018) and recognize the heterogeneity of stakeholder and resource user groups, to stimulate decision-making that is both more integrative and more inclusive of women, youth and other marginalized groups (Hart et al. 2015; Ros-Tonen et al. 2015; Ros-Tonen et al. 2018). The research community can play a role in facilitating these processes and ensuring that integration goes beyond engagement; that muddling through does not imply muddled thinking; and that honest brokerage extends to honest reporting.

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